Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method of performing data detection in a wireless communication system, comprising:

deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission, wherein the first data stream is a base stream for a hierarchical coded data transmission;

deriving data symbol estimates for the first data stream based on the received symbols;

decoding the LLRs for code bits of the first data stream to obtain decoded data for the first data stream;

estimating interference due to the first data stream based on the ~~decoded data~~ data symbol estimates for the first data stream;

re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream, ~~wherein the interference due to the first data stream is estimated based on the remodulated symbols~~;

deriving enhancement LLRs based on the estimated interference due to the first data stream and ~~the LLRs for the code bits of the first data stream~~ received symbols;

adjusting the enhancement LLRs based on the remodulated symbols and the data symbol estimates, comprising:

detecting errors in the data symbol estimates based on the remodulated symbols, and

setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding; and

computing a decoded enhancement stream based on the enhancement LLRs, wherein the decoded enhancement stream is an enhancement stream for the hierarchical coded data transmission.

2. (Canceled)

3. (Original) The method of claim 1, wherein the LLRs for the code bits of the first data stream are derived from the received symbols in real-time without buffering the received symbols.

4. (Previously Presented) The method of claim 1, further comprising:

storing the LLRs for the code bits of the first data stream in a buffer; and

storing the enhancement LLRs in the buffer by overwriting the LLRs for the code bits of the first data stream.

5. (Previously Presented) The method of claim 1, wherein quadrature phase shift keying (QPSK) is used for both the first and enhancement data streams.

6. (Previously presented) The method of claim 1, wherein a modulation scheme with a higher order than quadrature phase shift keying (QPSK) is used for the first data stream, the method further comprising:

deriving received symbol estimates based on the LLRs for the code bits of the first data stream, and wherein enhancement LLRs are derived based on the received symbol estimates and the estimated interference.

7. (Original) The method of claim 6, wherein the deriving received symbol estimates includes:

forming two equations for each received symbol based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream, and wherein a received symbol estimate for the received symbol is derived from the two equations.

8. (Previously Presented) The method of claim 1, wherein the LLRs for code bits of the first data stream and the enhancement LLRs arc derived based on a dual-max approximation.

9. (Previously Presented) The method of claim 1, further comprising:

deriving channel gain estimates for a wireless channel used for the data transmission, and wherein the LLRs for code bits of the first stream, the enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates.

10. (Canceled)

11. (Original) The method of claim 1, wherein the wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols are from a plurality of subbands.

12. (Currently amended) An apparatus for a wireless communication system, comprising:

a first computation unit operative to derive log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission;

a second computation unit operative to derive data symbol estimates for the first data stream based on the received symbols;

modules configured to compute a decoded base stream based on the LLRs for code bits of the first data stream received from the first computation unit;

an interference estimator operative to estimate interference due to the first data stream based on the ~~decoded base stream~~ data symbol estimates for the first data stream;

an encoder and modulator operative to re-encode and remodulate the decoded base stream to obtain remodulated symbols for the first data stream, ~~and wherein the interference estimator is operative to estimate the interference due to the first data stream based on the remodulated symbols~~;

a third computation unit operative to derive enhancement LLRs by subtracting the estimated interference due to the first data stream from the ~~LLRs for the code bits of the first data stream~~ received symbols;

a LLR adjustment unit operative to adjust the LLRs for code bits of the enhancement stream by:

detecting errors in the data symbol estimates based on the remodulated symbols, and

setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding; and

modules configured to compute a decoded enhancement stream based on the enhancement LLRs.

13. (Canceled)

14. (Previously Presented) The apparatus of claim 12, further comprising:

a buffer operative to store the LLRs for the code bits of the first data stream and to store the enhancement LLRs by overwriting the LLRs for the code bits of the first data stream.

15. (Previously Presented) The apparatus of claim 12, further comprising:

a channel estimator operative to derive channel gain estimates for a wireless channel used for the data transmission, and wherein the LLRs for the code bits of the first data stream, the enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates.

16. (Currently amended) An apparatus for a wireless communication system, comprising:

means for receiving a hierarchical coded data transmission, the hierarchical coded data transmission comprising a base stream and an enhancement stream;

means for deriving log-likelihood ratios (LLRs) for code bits of the base stream based on received symbols for the hierarchical coded data transmission, wherein the LLRs for the code bits of the base stream are derived from the received symbols in real-time without buffering the received symbols;

means for deriving data symbol estimates for the base stream based on the received symbols;

means for computing a decoded base stream based on the LLRs for code bits of the base stream;

means for decoding the LLRs for the code bits of the first data stream to obtain decoded data for the base stream;

means for estimating interference due to the base stream based on ~~the decoded base stream and~~ the data symbol estimates;

means for re-encoding and remodulating the decoded data to obtain remodulated symbols for the base stream~~, wherein the interference due to the base stream is estimated based on the remodulated symbols~~;

means for deriving LLRs for code bits of the enhancement stream by subtracting the estimated interference due to the base stream from the ~~LLRs for the code bits of the base stream~~ received symbols;

means for adjusting the LLRs for the code bits of the enhancement stream based on the remodulated symbols and the data symbol estimates, comprising:

means for detecting errors in the data symbol estimates based on the remodulated symbols, and

means for setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding; and

means for computing a decoded enhancement stream based on the LLRs for code bits of the enhancement stream; and

means for storing LLRs for the code bits of the base stream and LLRs for the code bits of the enhancement stream, wherein LLRs for the code bits of the enhancement stream are stored by overwriting the LLRs for the code bits of the base stream.

17-19. (Canceled)

20. (Previously Presented) A method of performing data detection in a wireless communication system, comprising:

deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission;

deriving data symbol estimates for the first data stream based on the received symbols or the LLRs for the code bits of the first data stream;

decoding the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream;

re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream;

estimating interference due to the first data stream based on the data symbol estimates;

deriving LLRs for code bits of a second data stream based on the received symbols and the estimated interference;

adjusting the LLRs for the code bits of the second data stream based on the remodulated symbols and the data symbol estimates for the first data stream;

performing an error detection function for the data symbol estimates based on the remodulated symbols;

deriving correction factors for the data symbol estimates detected to be in error; and

updating LLRs for code bits of the data symbol estimates detected to be in error with the correction factors.

21. (Previously Presented) The method of claim 20, wherein the data symbol estimates are derived by making hard decisions on either the received symbols or the LLRs for the code bits of the first data stream.

22-24. (Canceled)

25. (Original) The method of claim 20, wherein the LLRs for the code bits of the first and second data streams are derived from the received symbols in real-time without buffering the received symbols.

26. (Original) The method of claim 20, further comprising:

buffering the LLRs for the code bits of the first and second data streams for subsequent decoding.

27. (Canceled)

28. (Currently amended) An apparatus for a wireless communication system, comprising:

a first computation unit operative to derive log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission;

a decision unit operative to derive data symbol estimates for the first data stream based on the received symbols;

an interference estimator operative to estimate interference due to the first data stream based on the data symbol estimates;

a decoder operative to decode the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream;

an encoder and modulator operative to re-encode and remodulate the decoded data to obtain remodulated symbols for the first data stream;

a second computation unit operative to derive log-likelihood ratios (LLRs) for code bits of a second data stream based on the estimated interference and the ~~LLRs for code bits of the first data stream~~ received symbols;

a symbol error detector configured to perform an error detection function for the data symbol estimates based on the remodulated symbols; and

an adjustment unit operative to adjust the LLRs for the code bits of the second data stream based on the remodulated symbols and the data symbol estimates for the first data stream, wherein the adjustment unit is operative to derive correction factors for data symbol estimates detected to be in error and to update LLRs for code bits of the data symbol estimates detected to be in error with the correction factors.

29-30. (Canceled)

31 . (Currently amended) An apparatus for a wireless communication system, comprising:

means for deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission;

means for deriving data symbol estimates for the first data stream based on the received symbols;

means for estimating interference due to the first data stream based on the data symbol estimates;

means for decoding the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream;

means for re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream~~, wherein the interference due to the first data stream is estimated based upon the remodulated symbols~~;

means for deriving LLRs for code bits of a second data stream based on the received symbols and the estimated interference;

means for adjusting the LLRs for the code bits of the second data stream based on the remodulated symbols and the data symbol estimates wherein the means for adjusting comprises:

means for deriving correction factors for the data symbol estimates detected to be in error, and

means for updating the LLRs for code bits of the data symbol estimates detected to be in error with the correction factors; and

means for computing a decoded enhancement stream based on the LLRs for code bits of the second data stream.

32–37. (Canceled)

38. (New) The apparatus of claim 12, wherein the LLRs for the code bits of the first data stream are derived by the first computation unit from the received symbols in real-time without buffering the received symbols.

39. (New) The apparatus of claim 12, wherein quadrature phase shift keying (QPSK) is used for both the first and enhancement data streams.

40. (New) The apparatus of claim 12, wherein the second computation unit is operative to form two equations for each received symbol based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream, and wherein a received symbol estimate for the received symbol is derived from the two equations.

41. (New) The apparatus of claim 12, wherein the LLRs for code bits of the first data stream and the enhancement LLRs are derived based on a dual-max approximation.

42. (New) The apparatus of claim 12, further comprising a fourth computation unit operative to derive channel gain estimates for a wireless channel used for the data transmission, and

wherein the LLRs for code bits of the first stream, the enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates.

43. (New) The apparatus of claim 12, wherein the wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols are from a plurality of subbands.

44. (New) The apparatus of claim 16, wherein the LLRs for the code bits of the first data stream are derived by the first computation unit from the received symbols in real-time without buffering the received symbols.

45. (New) The apparatus of claim 16, wherein quadrature phase shift keying (QPSK) is used for both the first and enhancement data streams.

46. (New) The apparatus of claim 16, further comprising means for forming two equations for each received symbol based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream, and wherein a received symbol estimate for the received symbol is derived from the two equations.

47. (New) The apparatus of claim 16, wherein the LLRs for code bits of the first data stream and the enhancement LLRs are derived based on a dual-max approximation.

48. (New) The apparatus of claim 16, further comprising means deriving channel gain estimates for a wireless channel used for the data transmission, and wherein the LLRs for code bits of the first stream, the enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates.

49. (New) The apparatus of claim 16, wherein the wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols are from a plurality of subbands.

50. (New) A computer-readable medium having stored thereon computer-executable instructions for:

deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission, wherein the first data stream is a base stream for a hierarchical coded data transmission;

deriving data symbol estimates for the first data stream based on the received symbols;

decoding the LLRs for code bits of the first data stream to obtain decoded data for the first data stream;

estimating interference due to the first data stream based on the data symbol estimates for the first data stream;

re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream;

deriving enhancement LLRs based on the estimated interference due to the first data stream and received symbols;

adjusting the enhancement LLRs based on the remodulated symbols and the data symbol estimates, comprising:

detecting errors in the data symbol estimates based on the remodulated symbols, and

setting LLRs for code bits of the data symbol estimates detected to be in error to erasures for decoding; and

computing a decoded enhancement stream based on the enhancement LLRs, wherein the decoded enhancement stream is an enhancement stream for the hierarchical coded data transmission.

51. (New) The computer-readable medium of claim 50, wherein the LLRs for the code bits of the first data stream are derived from the received symbols in real-time without buffering the received symbols.

52. (New) The computer-readable medium of claim 50, further comprising instructions for:

storing the LLRs for the code bits of the first data stream in a buffer; and

storing the enhancement LLRs in the buffer by overwriting the LLRs for the code bits of the first data stream.

53. (New) The computer-readable medium of claim 50, wherein quadrature phase shift keying (QPSK) is used for both the first and enhancement data streams.

54. (New) The computer-readable medium of claim 50, wherein a modulation scheme with a higher order than quadrature phase shift keying (QPSK) is used for the first data stream, further comprising instructions for:

deriving received symbol estimates based on the LLRs for the code bits of the first data stream, and wherein enhancement LLRs are derived based on the received symbol estimates and the estimated interference.

55. (New) The computer-readable medium of claim 54, wherein the deriving received symbol estimates includes:

forming two equations for each received symbol based on LLRs for all code bits of a data symbol carried in the received symbol for the first data stream, and wherein a received symbol estimate for the received symbol is derived from the two equations.

56. (New) The computer-readable medium of claim 50, wherein the LLRs for code bits of the first data stream and the enhancement LLRs arc derived based on a dual-max approximation.

57. (New) The computer-readable medium of claim 50, further comprising instructions for:

deriving channel gain estimates for a wireless channel used for the data transmission, and wherein the LLRs for code bits of the first stream, the enhancement LLRs and the interference due to the first data stream are derived with the channel gain estimates.

58. (New) The computer-readable medium of claim 50, wherein a wireless communication system utilizes orthogonal frequency division multiplexing (OFDM), and wherein the received symbols via the wireless communication are from a plurality of subbands.

59. (New) The apparatus of claim 28, wherein the decision unit is operative to derive data symbol estimates by making hard decisions on either the received symbols or the LLRs for the code bits of the first data stream.

60. (New) The apparatus of claim 28, wherein the LLRs for the code bits of the first and second data streams are derived from the received symbols in real-time without buffering the received symbols.

61. (New) The apparatus of claim 28, further comprising a buffer operative to buffer the LLRs for the code bits of the first and second data streams for subsequent decoding.

62. (New) The apparatus of claim 31, wherein the data symbol estimates are derived by making hard decisions on either the received symbols or the LLRs for the code bits of the first data stream.

63. (New) The apparatus of claim 31, wherein the LLRs for the code bits of the first and second data streams are derived from the received symbols in real-time without buffering the received symbols.

64. (New) The apparatus of claim 31, further comprising means for buffering the LLRs for the code bits of the first and second data streams for subsequent decoding.

65. (New) A computer-readable medium comprising instructions for:

deriving log-likelihood ratios (LLRs) for code bits of a first data stream based on received symbols for a data transmission;

deriving data symbol estimates for the first data stream based on the received symbols or the LLRs for the code bits of the first data stream;

decoding the LLRs for the code bits of the first data stream to obtain decoded data for the first data stream;

re-encoding and remodulating the decoded data to obtain remodulated symbols for the first data stream;

estimating interference due to the first data stream based on the data symbol estimates;

deriving LLRs for code bits of a second data stream based on the received symbols and the estimated interference;

adjusting the LLRs for the code bits of the second data stream based on the remodulated symbols and the data symbol estimates for the first data stream;

performing an error detection function for the data symbol estimates based on the remodulated symbols;

deriving correction factors for the data symbol estimates detected to be in error; and

updating LLRs for code bits of the data symbol estimates detected to be in error with the correction factors.

66. (New) The computer-readable medium of claim 65, wherein the data symbol estimates are derived by making hard decisions on either the received symbols or the LLRs for the code bits of the first data stream.

67. (New) The computer-readable medium of claim 65, wherein the LLRs for the code bits of the first and second data streams are derived from the received symbols in real-time without buffering the received symbols.

68. (New) The computer-readable medium of claim 65, further comprising instructions for buffering the LLRs for the code bits of the first and second data streams for subsequent decoding.